WHAT IS CLAIMED IS:

1. A multiple access control system with intelligent bandwidth allocation for wireless ATM networks which transfer information via frames, each frame being divided into a plurality of slots to be allocated to constant bit rate (CBR), variable bit rate (VBR), available bit rate (ABR), and signaling control (SCR) traffic classes, the frame having a common notification field (CNF) slot for being placed with code sequences by mobile terminals using ABR slots, the system comprising:

an intelligent bandwidth allocator for allocating reservation type bandwidth to the mobile terminal when the mobile terminal requests a CBR/VBR traffic, and dynamically allocating contention type bandwidth to the mobile terminal when the mobile terminal requests SCR and ABR traffics;

a traffic estimator/predicator for predicting the CNF value of a subsequent frame by the CNF value of at least one frame, and determining the number of the SCR slots and ABR slots to be allocated by the intelligent bandwidth allocator based on an optimal allocation model for the contention type bandwidth constructed in offline; and

a multiple access controller for providing the reservation type bandwidth with a multiple access function in a reservation access manner, and providing the contention type bandwidth with a multiple access function in a contention access manner.

2. The system as claimed in claim 1, wherein the multiple access controller executes a dynamic tree splitting collision resolution algorithm using an optimal splitting depth of d, such that, when collisions occur and

the number of splitting is less than d, twice as many as the number of collided slots are allocated at the next splitting level, and this process repeats until either there is no collision or the number of splitting levels has reached d.

3. The system as claimed in claim 1, wherein the traffic estimator/predicator is formed by a neural-fuzzy network to predict the CNF value of a subsequent frame.

4. The system as claimed in claim 3, wherein the neural-fuzzy network predicts a future CNF value based on a plurality of most-recent CNF values, and at the end of the subsequent frame, an actual CNF value is generated, which is also input to the neural-fuzzy network to perform a learning operation.

5. The system as claimed in claim 1, wherein the CNF slot is the last slot of a frame.

6. The system as claimed in claim 1, wherein the optimal allocation model for the contention type bandwidth is a table including CNF values and corresponding numbers of SCR slots and ABR slots to be allocated.